

CLAIMS

1. A solid state image pickup apparatus comprising  
a photodetecting device and one or more thin  
film transistors connected to said photodetecting  
5 device are formed in one pixel, a part of said  
photodetecting device is formed over at least a part  
of said thin film transistor, and

said thin film transistor comprises a source  
electrode, a drain electrode, a first gate electrode,  
10 and a second gate electrode arranged on the side  
opposite to said first gate electrode with respect to  
the source electrode and the drain electrode.

2. A solid state image pickup apparatus according  
15 to claim 1, wherein

said thin film transistor is a double gate type  
thin film transistor comprising at least the first  
gate electrode, an insulating layer, a semiconductor  
layer, a semiconductor layer having a impurity doped ,  
20 the source and drain electrodes, an insulating layer,  
and the second gate electrode which are sequentially  
formed onto an insulating substrate.

3. A solid state image pickup apparatus according  
25 to claim 1 or 2, wherein

said second gate electrode covers at least a  
part of a gap portion between said source electrode

and said drain electrode.

4. A solid state image pickup apparatus according to any one of claims 1 to 3, wherein

5        either said source electrode or said drain  
electrode is connected to a transfer wiring connected  
to a signal processing circuit, and said second gate  
electrode does not two-dimensionally overlap either  
the source electrode or the drain electrode connected  
10 to said transfer wiring.

5. A solid state image pickup apparatus according to any one of claims 1 to 4, wherein

      said second gate electrode and said first gate  
15 electrode are connected to one gate driver circuit by  
a gate wiring and controlled by said gate driver  
circuit.

6. A solid state image pickup apparatus according  
20 to any one of claims 1 to 5, wherein

      said second gate electrode is formed as a film  
simultaneously with an electrode material  
constructing the photodetecting device.

25    7. A solid state image pickup apparatus according to any one of claims 1 to 6, wherein

      said photodetecting device is constructed by at

least an insulating layer, a semiconductor layer, and a semiconductor layer having a impurity doped c.

8. A solid state image pickup apparatus according  
5 to any one of claims 1 to 6, wherein

said photodetecting device is constructed by at least a first semiconductor layer having a impurity doped , a semiconductor layer, and a second semiconductor layer having a impurity doped of a  
10 conductivity type opposite to that of said first semiconductor layer having a impurity doped .

9. A radiation image pickup apparatus wherein  
said photodetecting device of the solid state  
15 image pickup apparatus according to any one of claims 1 to 6 is a radiation detecting device for directly and photoelectrically converting a radiation.

10. A radiation image pickup apparatus wherein  
20 a wavelength converter is arranged onto said photodetecting device of the solid state image pickup apparatus according to any one of claims 1 to 8.